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CACTUS AND SUCCULENT JOURNAL

VOL. XXIX NOVEMBER-DECEMBER, 1957 NO. 6

FIG. 90. *Lithops jacobseniana* and *L. aucampiae* flowered by Marjorie Shields in New Zealand. See pg. 151

CACTUS AND SUCCULENT JOURNAL

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PRESIDENT'S MESSAGE

Mr. Howard E. Gates, who was president of the Cactus and Succulent Society of America in 1936 and 1937, passed away on October 5, 1957. The loss to the Society is incalculable for Mr. Gates was one of our most active members and loyal supporters. His activities in all phases of the convention, including the fun session, last July will be remembered with pleasure by all who were in attendance. Mr. Gates served as an organizer of conventions in the past and as advisory member of the Convention Committee of the Executive Board of the Cactus and Succulent Society of America in 1957. His advice concerning conventions and many other affairs of the Society has been much appreciated by the officers of recent years.

FIG. 91. Snapshot of Howard Gates and Harry Johnson taken at the Convention by Mildred Wellbaum of Oregon.

Mr. Gates' large and excellent nursery at Norco, California, is well known to all who are concerned with cacti. His horticultural and botanical work and exploration for cacti in Mexico and particularly in Baja California are marvels of achievement. Howard Gates was known to nearly everyone who has been active in the Cactus and Succulent Society of America. He earned well through his helpfulness and his pleasant personality the title, bestowed through the affection of many people, of "Mr. Cactus." The Society expresses its deepest sympathy to Mrs. Gates and to her son, The Rev. Morgan Gates.

LYMAN BENSON

SOCIEDAD MEXICANA DE CACTOLOGIA

México, D. F., México

Dear Dr. Benson:

From a letter just received from Dr. George Lindsay, I have learned of the death of Mr. Howard E. Gates.

As you are the President of the Cactus and Succulent Society of America, to which Mr. Gates belonged as one of its most distinguished figures, I wish to tell you that all of the members of the Sociedad Mexicana de Cactología join in the sorrow felt by all cactus lovers.

This news has personally filled me with profound sorrow as Mr. Gates was to me a wise counsellor and great friend.

With kind personal regards,

H. BRAVO H.

FIG. 92. The Mesembryanthemum corner

DESERT FLOWERS UNDER GLASS

The story of my experiences and delight in growing and flowering Cacti and Succulents in a small glasshouse in Christchurch, New Zealand

By MARJORIE E. SHIELDS

CHAPTER 5

Don't the *Pleiospilos* look gay and cheerful after the subdued colours we saw in the last chapter? The Stapelias we found, liked a little shade or preferably moving shadows, but these plants from Karroo, Cape Province, which so closely resemble the granite rocks amongst which they are found, need the full sun to bring out the beauty and glorious scent of their flowers. From February till May there is a continuous display, but once flowering ceases water must be withheld until the following December. During this period the plant must be kept completely dry for a very wonderful thing is happening. New leaves are being born. These baby leaves feed on the nourishment in the old ones and you will notice the old leaves gradually becoming flabby as their substance is slowly drawn from them. As the new leaves increase in size, the old ones decrease, until finally nothing remains but a hard corky skin. Now, at mid summer (December in N. Z.), is the correct time to repot if necessary, using a very sandy soil mixture. Watering is also recommenced and continued until the plant has finished flowering, when the whole miracle will be repeated.

Now let us look at the plants individually, taking them as nearly as possible in their order of flowering, and see wherein they differ. *Pleiospilos simulans* meaning "imitating", is always one of the first. Isn't it a gorgeous sight? The plant is hidden except for the points of green rock rising up between the large bright yellow daisy-like blooms which are 3 inches across. The colour pales towards the centre where the petals surround a large fluffy ball of yellow stamens. Being my first stone plant I naturally watched its growth very anxiously, as I was told I would not be able to manage it. It flourished and down in its cleft produced as many as five flowers with its first blooming. I was very proud of it. Then one day to my horror I found it had split at the bottom of the cleft! In dismay I wrote at once to a friend. All she could tell me was that I must have overwatered it, and I would probably lose it, but to keep it dry, which I did. The plant did not collapse as I expected, but after splitting, produced a double plant, much to my delight. Since then it has multiplied each year until now I have five pairs of split rock—and a real specimen. Each pair of leaves has its own set of flowers which form a complete girdle. *P. bolusii,* named

after Harry Bolus, Cape Town, is more like a split boulder with leaves rounded at the top and flowers a deep yellow, very large and strongly scented. *P. rouxii* is a quite different type, being a cluster of small narrow pointed leaves with flowers much larger than the plant itself. Each little rock cleft has room to produce only a single blossom, which is just faintly perfumed. *P. 'compactus'**—(compact or closely united), is different again, with very green leaves (the others mentioned being more bronze than green.) The tops having been caught by the sun are flushed with pink, as also are the tips of the calyx, making a delicate touch of colour against the soft green. The longish thick leaves come to a blunt point, and the delicately perfumed flower is clear yellow throughout. These four blossom during February.

March brings us three very different ones, *P. framesii, P. willowmorensis,* and *P. dekenahi. P. framesii* is a tall shapely plant with six pairs of leaves instead of the usual two, each pair fitting crosswise into the pair below to form a tall vase in which to display its flowers. The long thin leaves widen out towards the top before coming to a sharp point. Being keeled at the back they look almost as though in the making they were squeezed into shape between the thumb and two fingers, the wider surface made by the thumb being the top of the leaf. The large yellow flower shading to white in the centre holds together the white stamens. A very beautiful plant. *P. willowmorensis* has an enormous sweetly scented yellow flower with very narrow petals, measuring easily 5 inches across. Curiously at evening, it slowly closes its petals furling them like a closed umbrella, but the next day, when it opens again, the tips make a perfect little daisy which gradually enlarges until the whole length of flower is unfurled and spread out flat. The orange stamens deepen to almost red at the centre. *P. dekenahi* forms a clump and is a most prolific bloomer with pretty pale yellow flowers much smaller than the previous two being only 1¾ inches across.

During April five more add their wealth of bloom to the display, led by *P. leipoldii,* with blue-green, squat, sharply pointed leaves, rather like *P. framesii,* only the latter's are grass green and placed differently. These are the prettier shape being more like an arrowhead. The flower is large, with broader petals than some, shining yellow, shading to white where they meet the white stamens. And they are *white* not cream, a rather startling contrast! Then there is *P. magnipunctatus.* Isn't the flower magnificent? It seems to be larger every time I look at it. I am sure it keeps on growing. It is clear yellow without any shading and quite five inches across. The leaves are not as distinctive as some. But see! The flower has a short stem! It is so large it has to be lifted to give it room. Magnipunctatus means "with large dots", referring to the spotted leaves.

But here is the prettiest one of all—*P. optatus.* See the eye in the centre? The yellow petals shading to white, surround the white stamens, while in the centre is a circle of orange ones around the stigma lobes giving the "eye" effect. Isn't it beautiful? The dark green leaves are long and thin with a blunt point. Here is another with long leaves, but with sharp points this time. It is *P. sororius,* which means "of a sister". Queer name isn't it? It forms a cluster and has yellow flowers. *P. roodiae** is outstanding even though it has a much smaller flower. The main point of attraction is the queer shape of the leaves, which look for all the world like a pair of green pigeon-toed wooden shoes with the little flowers nestling in the space where the leg fits into the shoe. It is exquisite. The last one to flower is *P. brevisepalus* "having short sepals", smaller than some with yellow petals shading to white to match the filaments with yellow anthers. But look at the plant. How pretty with its quaintly shaped leaves; short, squat and very sharply pointed, like real arrowheads.

Well there they are. What an amazing group of plants! At first glance one might be forgiven for saying, "Oh, yes! *Pleiospilos,* they are all very much alike with their yellow flowers." The flowers may have a basic yellow colour but are they all alike? We have seen flowers that are entirely yellow, others with yellow petals shading to cream, with cream filaments and yellow anthers; yellow petals shading to white with white filaments and white anthers and the lovely one with the orange eye. Flowers with petals so long they furl and unfurl like an umbrella; some with narrow petals, others with broader ones; flowers both large and small. Then look how the leaves differ. There are large rocky pieces of split granite; rounded split boulders; long narrow slivers; arrowheaded ones; the one with the little wooden shoes and many others in infinite variety. To enjoy them thoroughly many are needed in a collection so that their queer shapes and different shadings of yellow may be appreciated.

Besides these queer rocky plants others, equally as queer and even more interesting, await us in this large pan of multicoloured pebbles. Can you find the plants? Where there is a label there you will find one. It is rather puzzling isn't it? They are so well camouflaged. While you are trying to sort them out I will tell you a little about them. As previously stated, each is planted in its own separate little tin buried in the large pan. To this

**Mesemb. compactum,* now *Pleiospilos nobilis*

*Changed to *P. prismaticus.*

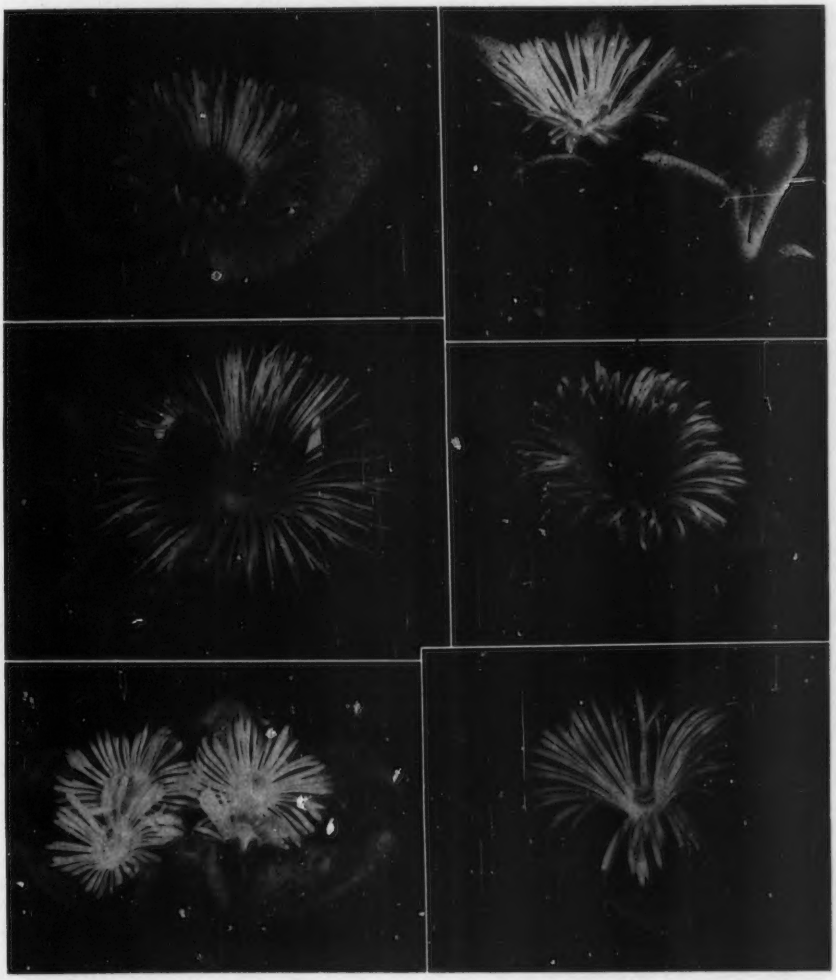

FIG. 93. *Pleiospilos bolusii* (upper left). *P. framesii* (upper right). *P. willowmorensis* (center left). *P. magnipunctatus* (center right). *P. roodiae* (lower left). *P. brevisepalus* (lower right).

I will add that when planting see that the roots go down straight and that the container is deep enough. A twisted or turned up root will often be the cause of a plant's failure to grow. The soil must be very sandy and the drainage good. Covering the surface with stones, whether matching or otherwise, conserves the moisture.

Lithops and other stone plants are not difficult when once the growing and resting periods are understood. The cycle is exactly the same as we saw in *Pleiospilos*. They flower, usually in the Autumn (February to April in N. Z.) and set seed. Now is the time to stop watering for underneath, where we cannot see, a new body is being formed which draws all its nourishment from the parent body and needs no assistance whatever from us. If you are observant you will be able to see in some of them the new body deep down between the cleft of the plant, whether that plant be a *Lithops*, or any of the many other stone plants. The new plant being developed will absorb all the nourishment from the parent body reducing it either to a hard shell or to a papery skin. When this happens recommence watering, and continue until the plant has finished flowering, when the whole process will be repeated.

This is exactly the same as I told you about the *Pleiospilos,* but it is so important it bears repeating. *Lithops* actually means "stone face", and as their little bodies are partly buried in the sand, leaving exposed only their faces which resemble the surrounding pebbles, it is no wonder they are called Living Stones. They are found in Great and Little Namaqualand, Karroo, South Africa.

Have you succeeded in finding plants amongst the stones? It should not be difficult now that so many are in flower. Why it is a real blossoming desert and very difficult to know which one to look at first! They are all so lovely, those with white flowers being equally as beautiful, if not more so, than those with the yellow ones. However, perhaps we should begin with the one that always flowers first, in December, a couple of months before any of the others. It is *Lithops pseudotruncatella,* meaning "false, somewhat truncate". Most *Lithops* are split in two and the flower pushes up in the crevice, but, instead of a split this one has only a small gap for the blossom to push through. How well the plant is marked; a work of art with that fine veining making such beautiful patterns on the fawn background. As you can see from what is left of the flower it was as large as the plant, yellow in colour and with long fine petals.

In February *L. gracilidelineata* and *L. kunjasensis* flowered, continuing in bloom until March. The former looks like a cluster of putty coloured stones with bronzy red fine veinings; its name means "thin lined". *L. kunjasensis* has very lovely colouring, a bluish gray body and pinky purple top deeply viened with darker purple. The orange flower needs no scent to attract attention for the beautiful body acts as a magnet. Completely different is *L. divergens* with yellow flowers shading to white, yellow anthers on white filaments and the branched stigma lobes standing clear of the stamens. The blue-green body has what is termed a "windowed top", but don't you think it looks like a large water blister? Especially now that the sun is on it, making it almost translucent—hence the reference to a window.

L. marthae (or *L. inornata* "unadorned") has a mole-coloured body with a lighter top, almost brownish around the edges, with a few short branched deep mole coloured veinings; the flower is golden yellow with many stamens. H. Jacobsen, Keil, Germany, is responsible for *L. jacobseniana,* which is lovely, with flowers glistening white, white filaments and yellow anthers. The plant itself is fawn with paler tubercles on its face outlined with golden brown. *L. bromfieldii,* named after H. Bromfield, S. Africa, has a very large yellow flower completely hiding the fawn pebble-like plant which has a tan-coloured top heavily veined with brown. *L. turbiniformis* is a terracotta-coloured "top shaped" plant with reddish brown pencilling, and a yellow flower. *L. terricolor* tells us its body is "earth coloured", with a pink and green tinged top spotted with greenish brown; the yellow flowers are large.

L. mickbergensis has a deep terracotta body, almost reddish gray and veined with reddish purple; the large flower is glistening white. *L. salicola* is completely hidden by its lovely pure white flowers with the stamens gathered together in a tight bunch looking as though they are held at the top with a drop of yellow sealing wax. By peeping underneath we can see that the plant body is stone gray with a darker top spotted with fawn. Beautiful *L. aucampiae* is very large with a chestnut-coloured body veined on the top with thick dark brown and gray markings; the large yellow flowers with very fine petals are 2½ inches across. These all flower in March and most continue blooming into April when many others join them.

L. fulleri is one with a white flower, white filaments and cream anthers; the body is pearl gray with brownish blue markings. A yellow flower would not look right against these colourings—but white is perfect. *L. venteri* is a real jewel isn't it? Rather smaller than some, but size is not everything; its body is stone gray and the fawn top has a delicate tracery design, almost like a skeleton leaf, etched in brown. The flower is deep yellow, almost orange, the petals being tipped with red. The flower, like the plant, is small but very lovely. *L. verruculosa* is also a small plant with a correspondingly small flower, which is fawn or biscuit-coloured deepening to orange in the centre. Most unusual isn't it? The body is light stone gray and the fawn top is covered with small tubercles outlined in light brown. The name means "covered with wart like projections.

Here is one of the largest and perhaps one of the most beautiful, *L. lesliei.* The rust brown body has the top covered with a dainty, intricate, lacy design in dark greenish brown. The flower is shining golden yellow very large to match the plant. Another with yellow blossoms is *L. olivacea,* with quite a different type of body. Instead of a design on its rounded top there is a large water blister. It lives up to its name the body being light olive-green with a darker blister. The yellow flower has quite wide petals shading to white, white filaments and yellow anthers. Sweetly scented *L. marmorata* also has a white flower glistening in the sun. The body is gray-green and the dark stone coloured blister top is faintly marbled with pale gray, so it lives up to its name which means "patterned like a marble". S. W. Africa is the natural habitat of *L. karasmontana* which is a beauty with large white

flowers. Its lovely purple body with a mauve top has soft, widish darker veinings. *L. mennellii* has an all yellow flower. The fawn body has a lighter fawn top with deep tracings in purplish brown. The loveliest one is *L. dorotheae* with a yellow flower. The plant is fawn to putty-coloured with a rounded top. Beautifully designed wide brown markings are not indented, but appear as though painted or faintly outlined in red. It is really outstanding and looks like an agate. *L. bella* is another with white flowers, differing from the others in that it has yellow stamens. The stone-gray body has a fawn top with deeply sunken dark gray markings, and certainly lives up to its name which means "beautiful". So is *L. weberi,* like a green stone with an overlay of pink which deepens as it spots and splashes the deeper green top; the flower is yellow. *L. otzeniana* has a tan body with a dark stone-coloured top. Little flakes of the tan sides lap over on to the dark top, like tiny wavelets, making a beautiful pattern. It is very lovely with its unusual markings. The yel-

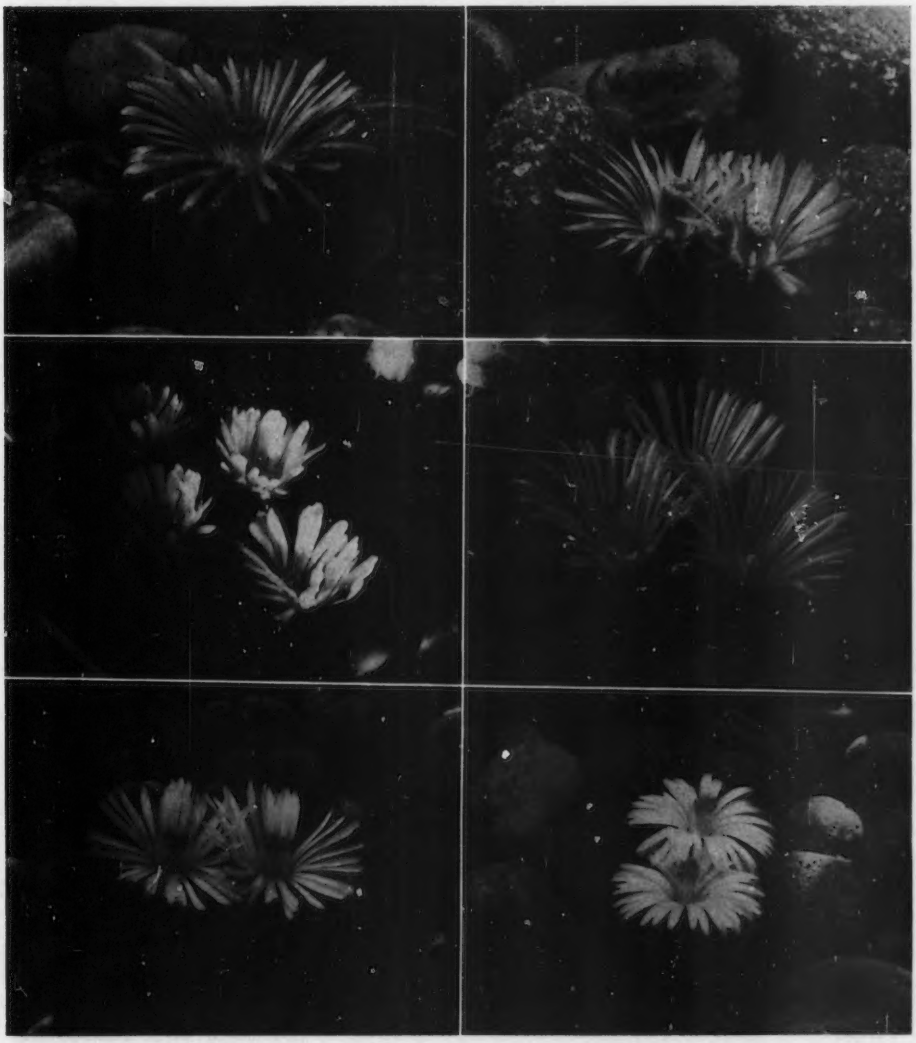

FIG. 94. *Lithops pseudotruncatella* (upper left). *L. venteri* (upper right). *L. olivacea* (center left). *L. marmorata* (center right). *L. karasmontana* (lower left). *L. bella* (lower right).

low flower shades to white with white filaments and yellow anthers. The station Kuibis, S. W. Africa, is responsible for the name *L. kuibisensis*. This one has a purplish brown body and softly coloured wide purplish brown markings indent the darker top. The flower is large and yellow and like the majority it spreads its petals like an umbrella almost completely hiding the lovely body that produced it. There are still more to flower and several tins are awaiting occupants. Flowering times are not always the same, for instance *L. kunjasensis* has flowered as early as February and as late as May. So much depends on the weather.

The Faucarias which surround the Lithops' pan put on a wonderful display of blossom during March and April, some continuing right on into June—our mid winter. There are sixteen of them altogether and it would take too long to describe each one separately. Suffice to say they all have from pale to golden yellow flowers. They come in all sizes too, from the small double ones

FIG. 95. *Faucaria bosscheana* (upper left). *F. acutipetala* (upper right). *F. albidens* (center left). *F. tuberculata* (center right). *F. speciosa* (lower left). *F. duncanii* (lower right).

of *F. bosscheana* to the long straggly blooms of *F. acutipetala* (sharply pointed petals.) All have petals more or less quilled at the base and flattened out towards the tips like a spatula. *F. smithii* is distinctive because it has five long waving stigma lobes held well above the stamens. Each pair of "jaws" differs too; some have many jagged teeth ending in a fine hair; some are hardly toothed at all; some are spotted, some plain; one is almost white, and one has little knobs for a decoration. The prettiest is I think *F. albidens,* meaning white teeth, which is strange as this one's teeth are flushed with pink, to match the edges of the leaves. It is a dainty little plant, and to complete its attractiveness it should have had white flowers. I was quite disappointed when they opened yellow. These plants are not stemless like *Lithops,* but have short branchy stems with fleshy roots. As they are found in the Karroo Desert they need a very sandy soil and good drainage. Mealie bugs and red spider are their chief enemies, but by keeping the dried up leaves picked off there will be less places for them to hide. They are ideal as an edging around a rockery (for they are hardy in a well sheltered corner), or as a surround for a *Lithops* stony desert in a glasshouse. Keep dry in the winter, and commence watering in the spring.

Behind the Faucarias are the Argyrodermas, which flower from March onwards. They look like small round pebbles of jade, split exactly in half. There are no spots or markings of any kind on their beautiful smooth, clean bodies—except for the horrible scars for which I am responsible. These plants dislike too much water and if I am too liberal, the bodies retaliate by splitting, much to my annoyance. There is this consolation though, the mistake can be rectified next year as no permanent damage has been done. *Argyroderma* flowers are a little differently arranged from the others. Instead of the stamens being above the petals they are deep down in the tube and rise in graduated lengths around the sides leaving a flat piece at the bottom of the tube. It puzzled me because I could find no stigma lobes. When I was reading Dr. G. Schwantes' book, "Cultivation of the Mesembryanthemacea", I came across this very interesting piece of information, "Argyrodermas have ten to twenty-four stigmas which are united in the form of a disc or knob." So that explains the "flat piece", and my inability to find the usual stigma lobes.

A. orientale, A. nortieri, A. longipes, and A. aureum all have their quota of yellow flowers, yet each is just a little different. *A. orientale* has a flattish rounded body and a very bright yellow flower as its name suggests. *A. nortieri's* body

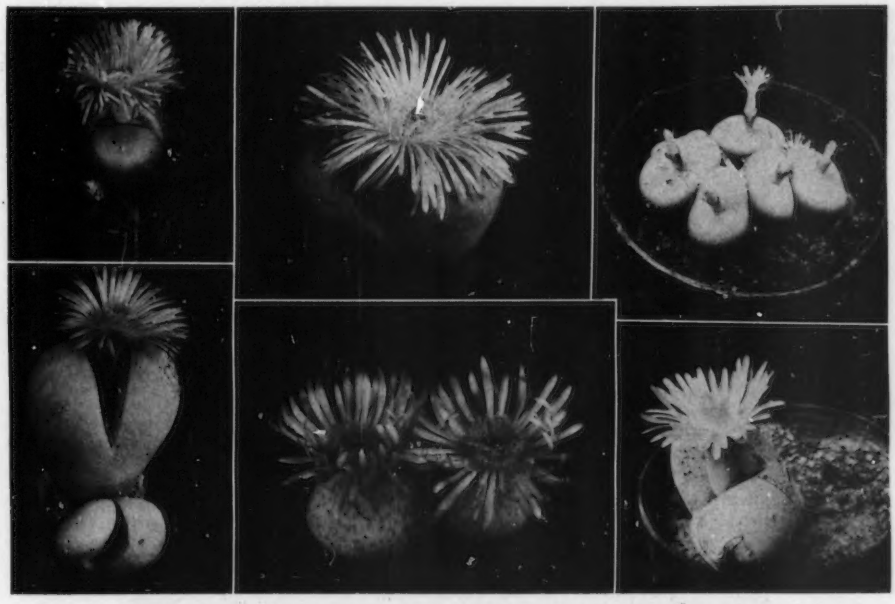

FIG. 96. *Argyroderma delaetii* var. *purpureum* (upper left). *A. aureum* (upper center). *Conophytum wiggetae* (upper right). *Dinteranthus inexpectatus* (lower left). *D. punctatus* (lower center). *D. puberulus* (lower right).

rises to a blunt ridge at the top, the pale yellow flower nestling well down between the leaf pairs. *A. longipes,* although its name means "long foot", has a similarly shaped body with a deeper yellow flower, while *A. aureum,* meaning "golden", has a more upright body very rounded at the top, and I have known it to produce two flowers from the one pair of leaves. Lovely blossoms these, larger than the others; the outer petals almost biscuit coloured suffused with pink, the inner ones yellow. The flowers are held above the plant on a short stalk. These four all blossom in April. *A. delaetii* var. *purpureum* (purple) blooms in May and is really outstanding because of its different colouring. The purple flower with white filaments, supported by a light green calyx in the shape of a Grecian urn has a perfect setting in the resida green body. But they don't all have pebble shaped bodies, as those two with the long finger shaped leaves are also Argyrodermas; one is *A. brevipes,* meaning "short", unfortunately I haven't flowered it yet, and the other is unnamed. The latter produced brilliant red blossoms which were quite dazzling in the sun. Someday I may learn its name. It flowers very late in the year almost into winter.

This funny little couple right in the front are Conophytums. I think *Conophytum wiggetae* is the queerest plant, like a cluster of round, flat buttons, and out of the hole in the centre of each up pops the wee flower, looking just like the frayed end of a pale yellow candle wick. *C. muscosipapillatum* is quite different with blue-green leaves edged with purple. The shining yellow daisy-like flowers appear between the leaf pairs. The colouring is lovely and the clump is just a mass of bloom.

Here is another queer one. This is *Fenestraria aurantiaca,* the first name means "a window" and the second "orange coloured". If you look closely at those chopped off looking growths you will see that each one has a blister or window covering its top, similar to some of the *Lithops.* Aren't the apricot daisy-like flowers lovely hanging over the side of the pot on long stems? Rather similar, though larger is *Ophthalmophyllum* species, the first portion of the name means "eye", and the latter "leaf". How appropriate for each leaf does end in an "eye"! Its pink body has a green rounded windowed top and tiny green windows on the sides. And what a dear little white flower it has. How right nature always is. That flower couldn't possibly have been yellow, with a body that colour. This plant must be kept perfectly dry during its resting period.

Another little plant all on its own is *Lapidaria margaretae.* Lapidaria, pertaining to a stone, and Margaretae, named after Frl. Margaritae Friederich, S. W. Africa. The thick triangular leaves have the same lovely glow as "Poole" china, soft gray green flushed with pink deepening to red round the edges. The beautifully textured skin is this plant's chief attraction. The flowers are stalked, large and golden yellow, reddish when fading.

Flanking the other side of the Lithops' pan are the *Dinteranthus*—some plants with long egg-shaped bodies slashed in two, others more flat-

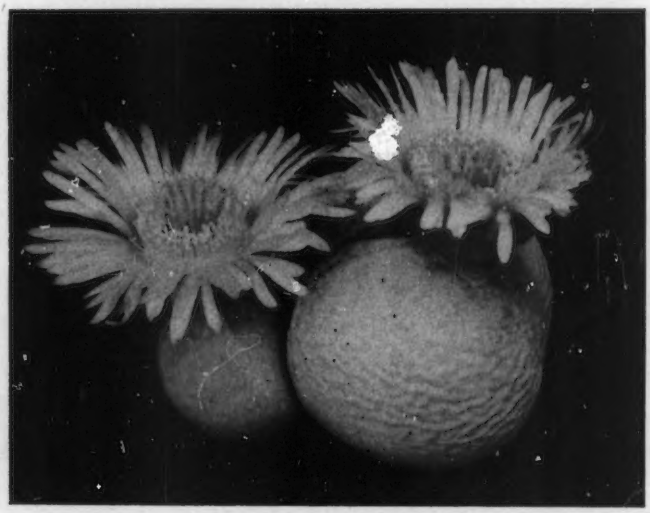

FIG. 97. *Dinteranthus pole-evansii*

tened. *D. punctatus* (dotted with minute spots) is one of the latter. The deep purple spots being quite plain on its pinky gray body. The short stalked blossoms are bright shining yellow with a large bunch of yellow stamens, and the style branches into seven long curled stigma lobes. *D. inexpectatus* (unexpected) is about the size and shape of a large duck egg, the same pinky gray of *D. punctatus* but instead of being spotted the surface is mottled with a slightly darker gray. The bright orange yellow flower is held well above the plant on a flat stalk. On the wide flower stalk of the "faintly pubescent or downy", *D. puberulus* is a deep golden yellow blossom with stamens so bright as to be almost orange. The little body is pale pinky mauve with deeper spots. This is not a tall plant like some of the others. Note also the split on its poor little body owing to a too liberal supply of water at some time. Then there is *D. pole-evansii* with its dove gray body marked and wrinkled like a walnut. The flower also has a solid base like the Argyrodermas, but is split down the centre. It is oval shaped and pale green in colour. In this case it cannot be a cluster of stigma lobes for they are plainly seen coming from the split centre in two rows, five on each side, longish and hairy. Around the outside of the hard centre is a thick fringe of yellow stamens and outside this is a thickish double row of glistening yellow petals. *Dinteranthus* species add much interest and beauty to the collection, and should be treated the same as Argyrodermas.

Here are two very beautiful *Nananthus*. *N. malherbei* and *N. villetii* both from S. Africa. They look rather like giant *Titanopsis*, except that the leaf is not as flattened on the top. The undersides of the leaves of *N. malherbei* are thickly sprinkled with raised white spots which come right to the edges, giving a slightly frilled appearance, especially along the top. The upper surface is unadorned. The flower, on quite a long stem, is biscuit coloured and about an inch and a half across. Even the calyx of this charming little plant is beautifully decorated with the little raised white spots. The plant of *N. villetii* is even prettier, the spots being larger and completely covering both sides of the leaf which is longer and narrower than the former. Both these little plants form rosettes, and the flower of this one is yellow and nestles well down amongst the leaves. I am thrilled to have them in my collection as they are such lovely jewels.

Right in the far corner is a large tin full of beautiful sunshine which goes by the name of *Glottiphyllum linguiforme*. During the rest of the year you wouldn't give the plant a second glance, except perhaps to wonder why I keep such a poor looking specimen in my collection. Well now you know! If this plant is given too much water the leaves swell out like great thick straps of seaweed (the name means "tongue-shaped"), till one day the plant will be no more for it will burst and collapse. By keeping it dry most of the year, even though it does not look very beautiful, it will repay you by forming a clump of many heads with a multitude of large yellow flowers which will stay in bloom for weeks just at a time when they are so welcome, in the depth of winter.

Another little winter flowering one is *Acrodon bellidiflorus*, the first portion of the name meaning "teeth at the summit" and the second part "daisy flowered". Quite different from anything else we have seen, the little plant looks like a clump of short thick grass. The pink-tipped white daisies on their long stalks standing up amongst all the green spear-like, grassy looking leaves, toothed occasionally along the edge, look just like the pink and white daisies on our lawn. But they haven't yellow centres like daisies. The stamens are white, in a tight cluster tipped with pink and with cream anthers. The white petals also tipped with pink or red have a line of red down the centre of each.

We have been studying the African autumn flowers for quite a while now, but before we see what spring has to offer have you noticed that *Ariocarpus* in the corner above the *Glottiphyllum* doing its best to attract attention? It is worthy of closer inspection so I will lift it down. Isn't it a strange looking plant? It could belong to the prehistoric age like our Tuatara lizard, for like him, it is all knobby and rocky looking and appears half asleep. But during March it comes to life; the horny leaves become greener and plumper, thick fresh cream wool appears in the crown and then the flowers appear. Beautiful bright pink blossoms, so fresh and lovely and seemingly so out of place coming from that rugged looking plant! The pink petals have a deeper pink mid-rib, and pale pink filaments standing in a straight bunch are topped with bright orange anthers. Waving high above is the white style, branching into six white stigma lobes. I think the plant looks as happy about its effort as I am. Yes, it is a cactus, even though it has no spines. *Ariocarpus fissuratus* is its name, the latter part meaning "split or fissured". Southwest Texas and Mexico are its homes and as these plants each has a long, thick tap root, larger than the plant itself, they need a deep pot. Also they do not need nearly the amount of water required by

other plants; they must be kept on the dry side and in the hottest part of the glasshouse. Therefore double potting is desirable, that is, after planting, replant the pot in a larger container filling the space between with sand or sandy soil mixture, and when watering, water this only, not the plant in the pot, and then only sparingly. They require full sunshine and plenty of fresh air; and respond to standard cactus soil mixture with plenty of lime, stones and a little more sand added. The soil must be porous.

To be continued.

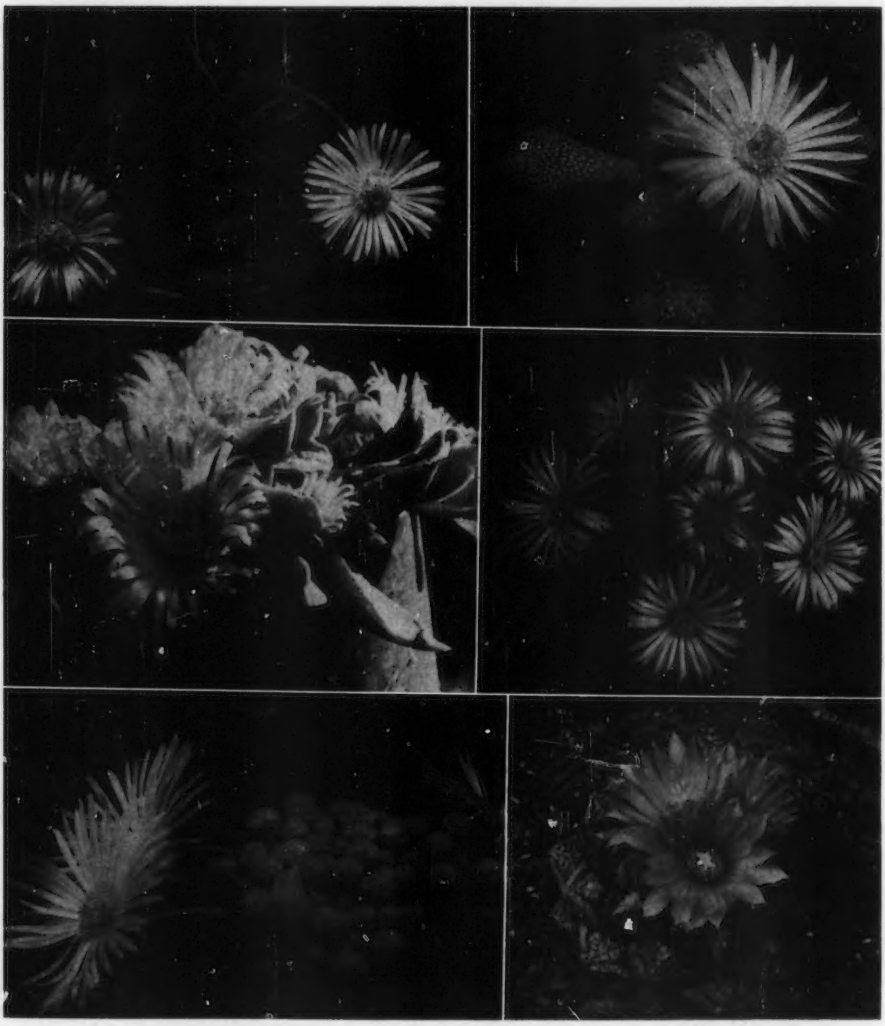

FIG. 98. *Nananthus malherbei* (upper left). *N. villetii* (upper right). *Glottiphyllum linguiforme* (center left). *Conophytum muscosipapillatum* (center right). *Fenestraria aurantiaca* (lower left). *Ariocarpus fissuratus* (lower right).

FIG. 99. *Crassula tetragona*

COMMON SUCCULENTS

In nearly every succulent garden is found a plant so common as to be almost ignored. *Crassula tetragona*—*crassula* meaning thick or dense and referring to the leaves or stems, *tetra* meaning four, *gona* meaning angled. This crassula is frequently called the pine tree, a good colloquialism if one uses a bit of imagination. It does look very much like a pine with its evenly extended arms and upturned leaves, the latter simulating pine needles. It grows from one to two or more feet tall.

"Four-angled" may have been chosen as descriptive of its regular four-sided growth, the result of its exactly alternating leaf-pairs, or because of the suggestion of four sides to the leaves themselves. These leaves grow in distinct pairs, stemless, upcurved, slightly rounded on the backs with a hint of a ridge on the faces, and rather sharply pointed. Could each pair be stacked evenly in the pair beneath it would fit like saucers placed together.

A strongly accentuated characteristic of tetragona is the pronounced ridge or ringed effect of its stalk and branches. These rings encircle the plant at each pair of leaves, and sections of the stalk disjoint at this point leaving a cup-like depression between the leaves. These disjointed sections with their leaf-pairs look like a flying bird or set of cow-horns. A high wind, the spray from the hose, or a passing bird, will dislodge these small divisions and shortly new plants are growing, and, if undisturbed, a mass of this rich green succulent rears itself over, under and through all the surrounding herbage.

The flowering stalks spring from the upper angle of the leaf, and usually from the first joint above a branching. These stalks branch two, three or four times, into delicate stems with tiny leaflets at each joint. The flowers (typical crassula flowers; erect, clustering), grow on little stems of their own, sometimes singly, or in groups of three or four. Set in an exquisite pale green

saucer is the lovely white five-petaled cup, no more than one-fourth inch in depth. Each petal's edge exactly over-laps its mate's to the very tips, which expand slightly, showing little brown or black specks held erect by dainty hair-like threads. The heart of the cup is filled with five solid, white seed-cups, each tapering to a vivid yellow dot. As the flowers fade and dry they turn a burnt orange color.

Crassula tetragona Linn. is a native of South Africa now so naturalized it seems more normally a true American citizen. It is also known as *Sedum tetragona.* Apart from its use as an ornamental its only usefulness would seem to be that it was used by the early colonists as a tonic for diarrhoea; the leaves being boiled to milk. This plant is often used in bowl-work. Its gracefully tapered growth, easily detached sections, simulation of a tree and adaptability to almost any arrangement, giving the necessary height, makes it one of the finest succulents for this type of gardening.

SPHAGNUM MOSS CULTURE

POTTING METHOD

Obtain dried sphagnum moss (NOT "Peatmoss", which is partly decomposed sphagnum) from nursery, seedsman or by gathering from bog and drying. Pick out all dead leaves, twigs, grass roots and ordinary moss, since this material may ferment and cause trouble. Chop or break the dried moss into one- or one-and-a-half inch lengths and mix until fluffy.

Prepare a nutrient solution by dissolving in a gallon of water 1 level teaspoonful of a complete and wholly soluble fertilizer (Ra-Pid-Gro, Hyponex, RX-15 are typical) and stirring in one level teaspoon of hydrated lime.

Douse a generous handful of the prepared moss in the solution, stir it about and squeeze under the surface several times to saturate it. Finally squeeze out the moss until it is only moderately moist (no drips). Prepare as many batches as needed for immediate use. Fluff out the moistened moss and sprinkle it with half a tablespoonful of fritted trace elements per bushel, then mix thoroughly and fluff.

In a clean pot place a layer of marble-sized pebbles or broken crock. This is to permit quick watering and may be omitted if only a few plants are grown. Fill the pot about half full of moist moss, pressing it down firmly but not ramming. Take the plant to be potted and very gently shake the soil from its roots. Do not wash, to avoid damaging root hairs. Spread the roots carefully on the moss in the pot and fill up with more moss, pressing it down fairly tightly to about ½ inch from the top of the pot. Top the filling with a layer of fine gravel to exclude light and inhibit the growth of algae which will otherwise clog air channels.

WATERING

No water is needed for two or three days. In general, water from the bottom when dry—about once a week. Use fertilizer solution once a month and add trace elements once a year.

It is easy to tell when water is needed because of the very light weight of dry moss: watering one plant and hefting it against a dry one will show the drastic difference.

Exact rules cannot be given for watering, since drying time will vary with pot size and atmospheric humidity. Do not, however, keep the moss wet all the time.

EXPLANATION OF METHOD

This is hydroponics—with a difference. The difference is the physical nature of the sphagnum moss. This is nearly pure cellulose in the form of empty cells and long hollow fibrous tubes. Even when well-packed it maintains a large volume of interconnected air spaces.

This material tends to prevent the two major troubles of house plant culture, over- and underwatering. Overwatering drowns plants by excluding air from the roots. Excess water drains from sphagnum so easily that even immediately after watering the material is full of air. Actual drying is extremely slow, since water is held in the hollow stems of the moss and released by diffusion. Even apparently dry sphagnum in the pot is moist enough to prevent drying of the roots. This principle cannot be pushed too far—water at once if wilting occurs.

SUITABLE PLANTS

A very wide variety of plants has been grown by this method with even better results than in soil. Plants which need constant moisture, such as African violets and begonias do very well. Bulbous plants are very successful. Epiphytes such as bromeliads, orchid cacti (Epiphyllum) and Christmas cacti are naturals—this is almost exactly their native habit. However, even desert cacti appear to thrive as do Echinopsis and Lobivia. All ordinary house plants may be grown in sphagnum with complete confidence.

MATERIAL SUPPLY

1. Sphagnum moss—florist, nurseryman, seedsman
2. Fertilizers—same, also 5 and 10
3. Fritted trace elements—same, or C.I.L.
4. Hydrated lime—same, or druggist.

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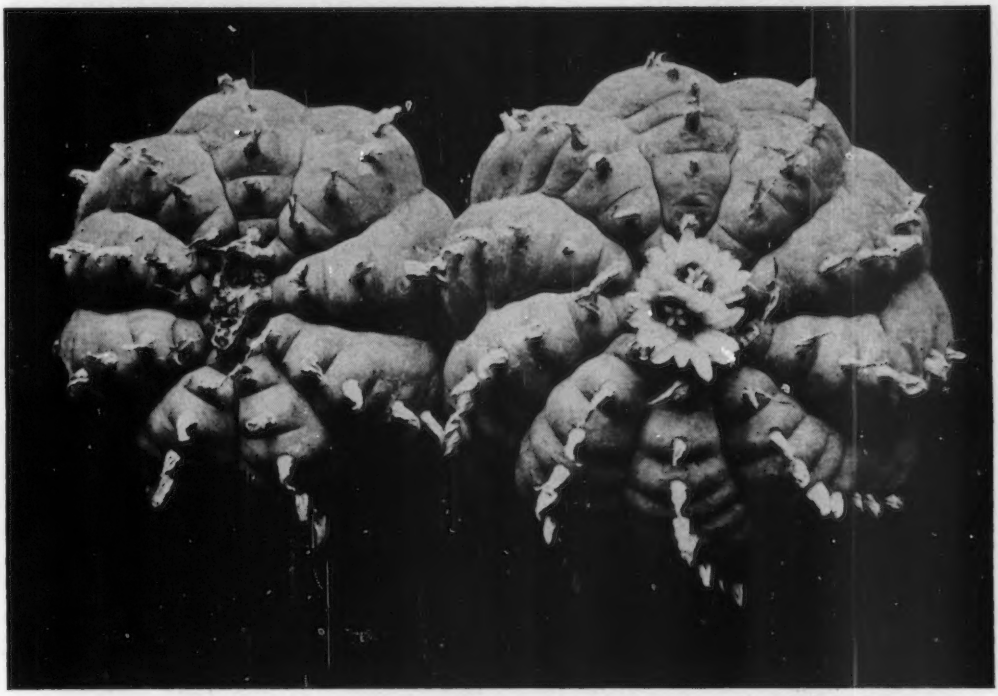

FIG. 100. *Lophophora williamsii*, natural size

THE PERSECUTED PEYOTE

By JAMES E. HARMON

The July-August issue of the Cactus and Succulent Journal carried a back page item concerning *Lophophora williamsii* and its ban from collections by United States Narcotic Regulations. This statement, however, was not completely correct; more specifically the ban was resurrected by one state (California) as provided in the narcotics section of its health and safety code.

What kind of danger lurks within this smooth green dumpling with the odd top-knots? It has no barbs to sting the unwary; it might even be described as squat and serene. But writers have referred to it as the "diabolic root"; does it have horns instead of thorns? Here is how the law reads in one state: "All parts of the plant of the genus Lophophora, whether growing or otherwise; the buttons thereof, the alkaloids extracted from any such plant; and every compound, salt, derivative, mixture or preparation of such plant ..." shall be termed a narcotic. Moreover "no person shall plant, cultivate dry or process ... any of the genera of the Lophophora also known as peyote, or any of the parts thereof"; and furthermore "the State Division of Narcotic Enforcement shall enforce all laws relating to the cultivation ... giving away ... furnishing or having in possession ... such narcotics".

In the face of such a denouncement the first thought may be to eradicate this threat to society. If you have one—even a half rotted thirty five center that you have nursed for about that many years—dig it up! Handle with gloves and burn the gloves too on the sacrificial pyre. To be extra sure stay out of the smoke—and bury the ashes.

Would such panic be justified? Not quite, for a number of investigators including doctors, psychiatrists, and social scientists have deflated the bogeyman of peyote. The classic study was made by Weston La Barre in his book *The Peyote Cult.*[1] More recently a study entitled *The Peyote Religion* was published by another anthropologist J. S. Slotkin.[2] The works of these two

authorities on peyote uses and effects are the most comprehensive and include extensive bibliographies.

La Barre described the peyote as a small, spineless, carrot-shaped cactus growing in the Rio Grande Valley and southward. The peyote contains nine narcotic alkaloids, some possessing strychnine-like reactions and the others morphine-like. The plant may be eaten dried, green or prepared as a tea. Even in pre-Columbian times the Aztec, Huichol and other Mexican Indians used the plant in religious ceremonies. The profound psychic and sensory derangements that accompanied the ingestion of these plants gave them a religious significance. Physiologically, the most striking result of eating peyote is the visual and color hallucinations that are experienced. Peyote intoxication is characterized by two stages; the first, caused by stimulant alkaloids, is exhiliration followed by depression, nausea and wakefulness. The second, a depressant alkaloid reaction, produces lethargy and the color visions.

Uncertainty exists in the names applied to peyote and its narcotic properties. Although sometimes called the mescal button, it should not be confused with the "mescal" bean *(Sophora secundiflora),* a tree bean with narcotic properties. Nor should it be mistaken for mescal which refers to the maguey *(Agave americana)* and to the brandy distilled from the Agave beer or "pulque". The term "mescal" applied to peyote is a misnomer; but the alkaloid in peyote that causes color visions is called mescaline. And finally, the peyote should not be confused with the hallucinant mushroom "teonanacatl" of Mexico, one of the fungi.

Chemical properties of the alkaloids in peyote and their physiological reactions are described in detail by Jacques Soulaire in Cactus et Medecine.[3] Included in this research were tests for the aphrodisiac myth in a manner that should have settled the question twenty years ago.

Other members of the cactus family contain alkaloids similar to the ones found in peyote. Soulaire describes Carnegine, Cereine, Pachycereine, and Pilocereine among others. T. A. Henry in his work *The Plant Alkaloids*[4] includes descriptions of the alkaloids in peyote. Of interest is the large number of plants, other than cacti, from which narcotics can be extracted.

S. Weir Mitchell[5] and Paul S. Hoch[6], among other psychiatrists, have investigated the psychological effects of peyote intoxication. In general, the findings were inconclusive due to the nausea produced or the antagonistic reactions of the pan-peyote alkaloids. Havelock Ellis, at the turn of the century, stirred a controversy with his statement that peyote could create an artificial paradise.

La Barre, Brant[7], Stewart[8] and Slotkin with McAllester[9] have examined the spread of Peyotism or the peyote religion from its earliest recorded rituals, emerging as a cult around 1880 in North America, through development into the Native American Church of the United States. Slotkin participated in the ceremonies of this Church and describes the religion not as a bizarre cult, but one in which the beliefs and practices of Peyotists fit the fundamental traits found in all religions. He described the use of peyote as sacramental. Peyote Ethic includes the Ten Commandments and Peyotists worship the same God as the Christians. Slotkin further explains that Peyotism is a syncretistic religion, essentially Christianity adapted to traditional Indian beliefs and practices. It is part of the acculturation process and provides the Indian with status and individuality. In the Menomini study Slotkin concluded that throughout the history of Indian-White contact White officials have usually tried to suppress any use of peyote because it had been conceived to violate their own mores. In his later book Slotkin cites nine attempts by the Bureau of Indian Affairs to have Congress pass laws prohibiting peyote. Failing here, this agency then tried to have peyote banned through administrative action by other government agencies. Slotkin bluntly states: "the history of Bureau suppression of Peyotism is a case study in how an agency can flout the Constitution, Congress, the judiciary and executive departments, if it has the support of powerful pressure groups . . . " He does concede, however, that since 1934 the Bureau of Indian Affairs has permitted Peyotism at least in conformity with Constitutional guarantees of religious freedom—and that this amended policy has brought criticism to the agency from its former supporters. More success has been experienced by those who consider peyote a menace through pressure at state levels. Some twelve states now have laws prohibiting peyote.

As a result of the continued attacks on Peyotism in spite of scientific studies, a group of social anthropologists, recognized as authorities on Indian ethnography, presented a statement in the monthly scientific digest, *Science.*[10] They affirm that peyote does not fit the description of narcotic as defined by Webster; nor does it exhibit tolerance or withdrawal effects as outlined in Merck's Manual—hence it could hardly be considered addicting. It does not cause orgiastic behavior; rather it is used as a religious symbol in the Native American Church. In a subsequent issue another authority on Indian culture, John Collier, of the University of Chicago concurred with the statements of these scientists. Ruth

FIG. 101. *Lophophora williamsii* is easily flowered even in young plants.

Underhill[11], writer and lecturer of the University of Denver, deplored the unfounded statements that have been made about Peyotist meetings. Writing in the *Annals of the American Academy of Political and Social Science* she describes Peyotist meetings as dignified and solemn, and in no way resembling marihuana orgies. From experiments she reports that to produce any bad effects at least 350 mgs. of mescaline are required. White experimenters have taken as many as 700 mgs. without harm. The standard buttons (eight) taken at Peyotist meetings contain only 107 mgs. These figures agree with the findings of previous investigators. She concluded that membership in the Native American Church is growing and for obvious reasons. The Indian now desires to share the advantages of the White man, yet he still feels that he is an outsider. Indians, as with any ethnic group, resent being treated as inferiors in any social institution—including religion. She felt it was most unwise to tamper with a religion that gave self-esteem and provided the Indian with a purpose—at least until there is scientific evidence that the practice is physically or socially injurious.

Two medical authorities on the subject of narcotics, Maurer and Vogel[12], treat the question of peyote in their book *Narcotics and Narcotic Addiction*. They point out that mescaline ($C_{11}H_{17}O_3N$) has been synthetically prepared and that for laboratory work the synthetic preparation is preferred, since the concentration of the active principle in the natural source, peyote, is extremely variable. Dr. Vogel, a former director of the Federal Narcotic Hospital, states that while peyote is listed as a narcotic it is not controlled by the Federal government; furthermore, peyote users are eligible for treatment in this institution but no peyote user has ever been treated. The authors reiterate: "there is no authentic record to show that habitual or addictive use of peyote occurs by Indians or others who use it periodically or experimentally. It is likely that the unpleasant physical effects of the drug, including the anxiety it produces would prevent it from becoming a habit forming drug of consequence . . ." They also noted that established drug addicts, even in withdrawal miseries, will refuse peyote because of the nausea that accompanies it. They observed that "peyote . . . has never been identified with criminal behavior." These doctors cited the difficulty in defining drug addiction. Addiction is usually characterized by one or more of three distinct, but related, phenomena: tolerance, physical dependence and habituation. But if this definition is expanded to include the condition wherein a person has lost the power of self control and abuses a drug to such an extent that the person or society is harmed then the line becomes vague and could include cases of alcohol, tobacco and even "tranquillizer" addiction.

Aldous Huxley mentioned peyote as a substitute for the "soma" pill which was so essential to the future in his *Brave New World*. In the story a "civilized" woman was lost among the Indians—who still had not been acculturated at that advanced date. With no "soma" pills she still found some relief from her cares in the Indian's "peyotl"; but she, too, complained of the horrible taste.

What then is the reason for the persecution of the peyote—the little "hikuli", friend of the Indian? Authorities in the field of narcotics do not classify peyote as an addicting drug. The U. S. Public Health Service and U. S. Commissioner of Narcotics have not recommended that peyote be placed under federal control. It may be shipped in the U. S. Mail. The American Medical Association has not issued a statement condemning peyote. Scientists have experimented and found that while excessive doses are harmful, the disagreeable taste deters the consumption of any amount—beyond that nausea takes over. Researchers report no deterioration in long time users. Social scientists have freely censured White ethnocentricity that denies the Indian his own religion. The mathematics of supply alone would seem to prevent the use of peyote to dan-

gerous excesses. If eight buttons are required to produce intoxication, incredible acreages would be needed to produce the intoxicant necessary to create a social problem; for peyote is a notoriously slow and choosy grower—even in Texas and Mexico. Someone is jousting with more wind than windmill.

And what does it all mean to the average cactophile, with his little corner of the desert, be it three pots in the window or the sunniest side of his yard? With pink flowered peyote gone is there a deeper meaning? I believe there is and choose to repeat the words of U. S. Supreme Court Justice Brandeis: "the greatest dangers to liberty lurk in insidious encroachment by men of zeal, well meaning but without understanding." The words of another Supreme Court Justice, Oliver Wendell Holmes, are noted for their wisdom: "Let there be a clear and present danger before a civil liberty is impaired."

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NEW BOOKS

Sukkulentenkunde VI (Yearbook of the Swiss Cactus Society), January, 1957; 64 pp., 55 illustrations. Available from Abbey Garden Press for $2.50.

This well-known series is here continued at its usual high level of excellence under the editorship of H. Krainz. It is unfortunate that lack of funds prohibits its more frequent appearance. Paper, typography, and the numerous illustrations are all beyond reproach, and, as always, a well-balanced and interesting group of articles is presented. The more important of these are summarized here for those who do not read German:

"Is *Pilocereus* Schum. Biphyletic?", by F. Buxbaum. Though the evidence is still incomplete, this genus probably consists of at least two lines of different origin, the Mexican species being allied to *Lemaireocereus* and *Cephalocereus*, whereas certain West Indian and Brazilian species seem derived from the *Monvillea-Cereus* line. This theory is based partly on external floral morphology (a young bud of *Cereus* closely resembles the mature flowers of some South American Pilocerei) and partly on the structure of the nectary region.

"Pseudolobivia Backeb.—an Unjustified 'Genus' ", by F. Buxbaum. One of Backeberg's flimsiest genera is here demolished with great gusto. After reproducing the several conflicting, incomplete and erroneous generic descriptions of *Pseudolobivia* published by Backeberg, Buxbaum points out that the characters on which this genus is based are so trivial as to be often inadequate for separating species, and that Backeberg's use of them here is a "gross, pseudoscientific misdemeanor".

"Peruvian Cacti", by Werner Rauh. This long and fascinating survey, with superb photos, comments on the habitats and species of a cactus flora rivaling that of Mexico or Argentina.

"Rebutia fiebrigii forma *densiseta* Cullm. *forma nova"*, by W. Cullman. A Ritter discovery differing from the type in its dense white spination and orange flowers.

"Parodia gigantea Frič ex Krainz", by H. Krainz. This species was collected in Argentina by Frič in 1928 but its name has remained a *nomen nudum*. Here it is validly published and compared with its closest ally, *P. tilcarensis*.

"A Clarification of Some *Gymnocalycium* species", by B. Dölz. A careful analysis of three species, one of which, *G. stellatum*, is reduced to a variety of *G. quehlianum*.

"Echinocactus reichei Schum.", by H. Krainz. An important contribution to the knowledge of this little-understood species. It was described by Schumann in 1898, but its origin was unknown, and it did not appear in cultivation until 1955 when it was rediscovered in Chile by A. Fankhauser. Krainz, showing photos of a plant and drawings of its seed, confirms the classification of this species by Backeberg as a *Neochilenia* (some would call it a *Neoporteria*). On the other hand the plant usually found in collections under this name belongs in, or is closely related to, *Lobivia*, and until it is transferred to that or an allied genus, must be called *Reicheocactus pseudoreicheanus* Backeb.

"Observations on *Welwitschia bainesii* Carr.", by Emil Jensen. *Welwitschia* is one of the great wonders of the plant kingdom, a "living fossil" related, though rather distantly, to the cycads and conifers, and restricted to the coastal deserts of South West Africa. This article shows photos of marvellously weird specimens that would be appropriate to a Martian landscape, and reports in detail on such matters as pollination (ants are the suggested agent), damage to the plants by grazing animals, and the fungus which attacks the seed and causes so much difficulty in cultivating seedlings.

"On the Growth of *Bryophyllum daigremontianum"* and "Growth Research with *Cereus horridus* and *Lemaireocereus montanus"*, by E. Eichenberger. Experiments with seedlings of these species show that they grow fastest when subjected to a high day temperature (86°F.) and a considerably lower night temperature (60° or below). On the other hand, a very high or low night temperature hinders growth. Optimum growth in many species, therefore, would probably be encouraged by supplying a wide fluctuation between diurnal and nocturnal temperatures.

MYRON KIMNACH

FIG. 102. habitat photo of *Epiphyllum grandilobum* in the cloud forest of La Hondura, Costa Rica. Horich photo.

The Story of a Cactus Hunt in Costa Rica, C. A.

CLARENCE KL. HORICH

North of Costa Rica's beautiful capital, San José, lie the rugged chains of a gigantic mountain belt, known as the Cordillera Centrál. Its southernmost advance and, simultaneously, the easiest to be reached from the capital are the cloud forested ridges of La Palma. A narrow, but paved road leads us to their southern descents at San Jeronimo. Leaving this village in northern direction while following the gradually more and more neglected road, we can reach the highest point, El Alto (elevation approximately 1500 meters), within less than 2 hours if walking fast. The tempting proximity of La Palma to San José has induced nearly every botanist or plant collector who visited Costa Rica to roam its windy heights; and the incredibly diversified forms of often endemic plant life native to La Palma now partly tell us of their prominent discoverers . . . *Miltonia endresii, Warscewiczella wendlandii, Epidendrum wercklei* and *Oncidium pittieri* for instance are among those plant jewels which now honour the memory of early botanist-explorers who were the enviable first to report these La Palma flowers to science.

I had traversed the La Palma forests several times, with never-ending surprises awaiting me in regard to epiphytic plants, and it was for this reason that I repeatedly delayed my proposed excursion to La Hondura, a tiny settlement on the northern La Palma descent because even long before reaching the crest of El Alto, I found myself loaded like a pack mule with vast quantities of epiphytes of all sorts. But except for a plant or two of *Epiphyllum costaricense* found along the lower Río La Palma, I never came across other cacti in these forests. In fact, I would have missed La Hondura, had it not been for a cactus which, according to Dr. Paul C. Standley's *"Flora of Costa Rica"*, was recorded from the above village settlement.

The revelation of its home "La Hondura de San José" from where it had been reported by both the very competent explorers Carlos Wercklé (in 1900) and H. Pittier, was quite as enticing to me as the actual description of the plant in concern, *Epiphyllum grandilobum* (Weber) Britt. & Rose. (syn. *Phyllocactus grandilobus* Weber).

The fact that La Hondura lies on the ancient road to Carillo, a village no longer existent as a result of which civilization had not only never advanced in the above region (and thereby detroying the jungle as is usually the case), but actually retreated again from the wilderness, made me doubly sure that I would find the plant, despite the time of over half a century since it was last found.

The most important part of the *Epiphyllum grandilobum* description in the *Flora,* however, I missed completely: ". . . Apparently collected

elsewhere in the same region . . . In the original publication the elevation is given as 800 meters, doubtless in error . . ."

In other words, Dr. Standley had obviously checked the cited habitat years ago, finding it devoid of *Epiphyllum grandilobum,* if not unsuitable for this species to meet its natural requirements in the wild state. It may be that Pittier and Wercklé took their specimens from plants at that time cultivated or semi-wild in La Hondura, then assumed its occurence in the jungle-clad vicinity of this place. In any event, I left for La Hondura on the first of January, 1957, fully convinced I would return with a good "catch" of this cactus rarity.

After passing the foggy, wind-torn crest portion of El Also which at this point is the continental divide between the Pacific and Atlantic watershed, we descend steeply into the valley of the Río La Hondura, and almost at once the vegetation assumes an entirely different aspect. Subjected to the nearly incessant direct impact of the Atlantic cloud masses, however, protected now from the howling winds that dominate the only very gradually southward sloping high plateau lands between El Alto, La Palma and San Jeronimo, the cloud forests of the northern descent are host to vast amounts of large-leaved jungle plants not seen in even a single specimen prior to this slope.

Immediately, we notice enormous masses of different Heliconias, Philodendrons, Anthuriums, tall Begonias, "higeros", tree ferns, palms and even a species of Fuchsia. The same goes for the components of the epiphyte flora, still of such an abundance that the now tall trees seem to literally vanish under their masses. There are huge Vriesias not seen in the La Palma forests; a red-spiked, lilac-brown flowered *Guzmania,* rare around El Alto, all of a sudden appears in masses; and the red flowers of *Anthurium scherzerianum* shine on the trees through all the drifting fog and drizzle rain that envelops you.

The lower one gets on the ever more slippery, wet, swampy and muddy "road", the greater the welter of plants that have their origin in the Atlantic rain forest. Finally reaching the mountain platform upon which there are spread the four houses that compose the settlement of La Hondura we are nearing the warm zone ("zona templada"); and at once, we are amidst very typical jungle vegetation, represented by huge, nine feet tall *Heliconia,* thousands of *Deiffenbachia seguina,* an ever larger leaved *Anthurium,* etc., whereas the cloud forest plants such as tree ferns and certain species of shrubs descend to the level of the Río La Hondura, a roaring mountain stream 30 minutes further below the settlement.

The immediate vicinity of La Hondura has mainly been cleared of forest; and since I was, all of a sudden, most uncertain as to *where* to find my cactus game in this unexpectedly wet and vastly jungle-clad region, the descents of which were of predominantly unscalable steepness, I thought it would be best to proceed on the path of what was now left of the ancient Carillo road, downward toward the bottom of the Río La Hondura canyon, automatically assuming that no botanist would ever have penetrated the jungles of the canyon slopes, but would have confined himself mainly to the river shores.

The trail is almost swallowed up by jungles of such an enormous density that one can hardly see more of the trees than those trunks edging the path and the wildly rushing river. Words hardly suffice to describe the masses of epiphytes settling almost every inch of these trees. Aside from considerable amounts of epiphytic as well as parasitic shrubs they are festooned by millions of bromeliads, orchids, aroids, Peperomias, Gesneriads, Begonias, ferns and mosses. The white stars of the orchid *Miltonia endresii* mingle with the red flames of *Anthurium scherzerianum,* the deep orange of a trailing *Columnea,* the purple of a rare *Trichopilia coccinea* and the creamish pink-white of a *Xylobium.*

Nevertheless, I was unable to find even a single species of epiphytic cactus throughout all the area that I was able to traverse. Soon, I had covered a distance of about 4 kms., thereby reaching the rotten bridge over the river, whereupon I had actually left the district still pertaining to La Hondura. Close upon this point, the canyon narrows down into the deep valley ravine of El Veintisiete (El 27) where there are two houses left, only one of which is inhabited and, at the same time, the last human settlement before the distant villages of La Unión, Toro-amarillo two days further north. Leaving El 27, we find the old Carillo road completely devoured by the jungle. Only the faintest indication of what was once a travelled road is left and the machete (bushknife) has to be employed every moment in order to clear away bamboo and other growth clogging the path.

I once believed I had located the *Epiphyllum* high up in a tree; but all that happened when I tried to shoot the plant down from its lofty height was a frightening commotion behind some shrubs several dozens of feet back of me which, going by the tracks he had left, was obviously caused by a Puma *(Felis concolor)* which had stalked me, and which was apparently as shocked by the thunderous bang of my .38 caliber as I was about his unexpected presence. I failed to dislodge the plant, but a minute later

I saw that I had been fooled by a scandent aroid. This disappointment and the fact that the rains kept falling and that it was rapidly getting dark made up my mind for me to return, if possible, to La Hondura before nightfall.

I kept on the lookout for *Epiphyllum grandilobum* on the return, too, however, not only found myself quite as unfortunate as before, but soon quit looking up to the tree tops altogether when I had the unique, though quite unpleasant experience of stepping on one of those savage, apparently rear-fanged five-foot black snakes locally known by the name of "Gargantílla." Fortunately, I had my high rubber boots on without which one is sure to get wet feet in this muddy terrain, and the strike had no effect. I usually pick up any snake that I find, but this time I was not prepared to tangle with the infuriated brute, and before I had a chance to grab it, the "Gargantílla" vanished in the jungle growth. I barely reached La Hondura, all soaking wet, when night fell with tropical suddenness.

Having walked almost 25 kms. that day I was forced to stay in La Hondura rather than proceeding back to El Alto, San Jeronimo. Also, I was determined to give my search a second try. My host, Señor Amado Villalobos, to whom I showed a drawing of *Epiphyllum grandilobum*, claimed to have never seen a plant like this in the forest during all the 10 years that he had been residing in La Hondura. Nevertheless, I went out again very early the next morning. This time, I confined my search to the cloud forests of the eastern rims of the mountain platform of La Hondura which according to topographical stone marker appears to lie at an altitude of 1006 meters above sea level, unless that the inscription "Hito Ho. 1006" has another significance. The species of epiphytes found along this platform and its deep gorges and creek gulches vary little from those as I found them at the bottom of the canyon. Startling new to me was only the most desirable orchid *Lycaste tricolor;* and there are especially large numbers of a fine *Guzmania* worth mentioning in particular.

Having spent another five hours of a growingly more frustrating search throughout the dense forests. I was about to give up when, all of a sudden, I caught the glimpse of an epiphyte cactus which, upon the first sight, I believed to be my *Epiphyllum grandilobum*. I may mention beforehand that I spent hours trying to find another specimen thereafter, however, in vain. Let us therefore take a critical look at such a rare find before jumping at conclusions.

The cactus grew epiphytically on the trunk of a gigantic tree at the very edge of the La Hondura platform which was settled by hundreds of Begonias, Pleurothallis, four *Anthurium* species (including *A. scherzerianum*), three species of *Philodendron,* several different Peperomias, eight or more species of bromeliads (mainly Vriesias, Guzmanias, *Catopsis* and Tillandsias), a dozen different ferns (*Hymenophyllum, Nephrolepis, Polypod.um, Asplenium,* etc.), *Selaginella, Lycopodium, Epidendrum, Ornithidium, Maxillaria* sp. and *Reichenheimiana, Xylobium* sp., *Elleuphia* sp., *Sobralia* sp., *Dichaea* sp., *Stelis* sp., *Trichopilia coccinea, Oncidium pittieri, Miltonia endresii, Columnea* sp., etc., etc.

Now, the catch was that the branches of *Epiphyllum grandilobum* were described as being very broad, measuring up to 25 cm. in width, with the margins deeply lobed and the apex being obtuse or roundish . . . which was definitely not the case with the plant discovered. There were four major stems arising from the woody-terete, round base which each measured nearly 11 feet in length. These stems as well as the branches were essentially without spines or bristles, roundish and very sparsely branched throughout, and only in their upper third racemose and softly roundish-triangular. A young stem of 1.4 meter length was completely unbranched and roundish-triangular for its entire length.

These stems clambered among the epiphytic and parasitic bushes of the tree, being pendulous at their upper, branched parts. The branches here are thin and flat, measuring up to 76 cm. in length and achieving a width of not more than 9 cm. at the most, 6-7 cm. being the average, and either terminate in an acute or mucronate point, or trail off into another round stem with subsequent new branches to follow. One of the stems was infested by a parasitic member of the Mistletoe family *(Viscaceae).*

The branch margins are only very inconspicuously lobed, the areoles spineless and occasionally a strong vein protruded from the center rib which appear to have been the base of flowers. The plant bore neither flowers nor fruits, as a result of which I am most uncertain as to how it could be classified at the time of this writing.

The least that can be said is that the plant does not describe *Epiphyllum grandilobum* which is the only species of cactus reported from La Hondura. A number of live branches of this at least locally exceedingly rare *Epiphyllum* have been sent to Paul C. Hutchison, Botanical Gardens of the University of California, Berkeley, for further study. Until the time of its first flowering we will have to wait for its final identification.

I left for San José quite satisfied since the discovery of a cactus in this region could indeed be considered a very fortunate event, particularly, since its home is one of the wettest and still cold sections of the entire country, drenched by rains

and fogs for a minimum of 10 months each year. (The dry season here begins by the middle of January and lasts until the beginning of March.) I carried back some 40 branches, however, planted the old stems back on two trees of its home, believing they will easily thrive out again here in their native forest.

This long story of a cactus hunt would not be complete were I not to relate information given to me while I was on my way back to the capital. Reaching La Palma, I met an old Costa Rican plant collector, Señor Raphael Atavia of Moravia. Since we were both heading for San Jeronimo, I inquired my acquaintance about the subject of epiphytic cacti. It turned out that Señor Atavia knew the entire stretch San José, La Honduras, Carillo, Guápiles, where he told me he had collected plants several of which I knew to occur at the cited localities from the botanical literature. In other words, Sr. Atavia knew what he was talking about and, what matters more, he knew the forests of the entire Río La Hondura belt. Sr. Atavia now claimed to have never seen any species of cactus which he proved to know well from other localities in the actual Meseta Central, anywhere near around La Hondura, including the species that I had found; and remarked that the only possibility of meeting some species might be several kms. north of El 27, on the vertical rockwalls that frame the La Hondura River to the right (east). When I described *Epiphyllum grandilobum* to him, he flatly denied its existence in the cited region and only stated to have sometimes seen it in cultivation.

Concluding our observations, I do not wish to be as imprudent as to make the statement that *Epiphyllum grandilobum* simply does not occur wild in the La Hondura region, especially since I had found an equally unexpected and as yet unreported cactus to exist in these wet forests, but its occurence here *is* a doubtful matter. Dr. Standley's citation that the original publication stated the elevation of the *Epiphyllum grandilobum* haunt to lie at 800 meters, however, may relate to a locality discovered somewhere in the *valley* of the Río La Hondura and *not* to the immediate vicinity of the settlement, meaning the mountain platform and its descents. At this point, we enter the range of mere speculations, though, and may, therefore, leave the subject where we began, and wait for the moment that we finally do re-discover *Epiphyllum grandilobum* in its still secretive jungle haunt.

FROM OREGON

As reported in my previous article, the Oregon Cactus and Succulent Society planted a bed of native cacti in Champoeg Park in July of this year.

Two weeks ago a group of us went out to place rocks around the bed and through it to protect the cacti and we found that two thirds of them had been stolen.

This is very discouraging. We had planted the cacti to show visitors what Oregon had to offer in the way of native cacti. A beautiful sign was placed on the bed, explaining what the bed consisted of. But to no avail. We have a club, and at each meeting we have numbers of plants brought by the members. These plants are given away through a drawing and anyone who wishes to come to the meetings is more than welcome. It is our hope that someone who took plants from this planting will see this article, and refrain from further looting.

Oregon Cactus and Succulent Society
MILDRED WELLBAUM, *Reporter*
Mulino, Oregon

FIG. 103. *Sedum morganianum* was named for Dr. Morgan

DR. MERIDETH MORGAN

We regret to announce the death on August 3rd of Dr. Merideth Morgan Sr., of Richmond, California. Dr. Morgan, an optometrist by profession, was widely noted for his unusually enthusiastic, yet discriminating, taste in succulents. For many years he imported plants from other countries until he had amassed one of the outstanding collections in the United States. But he was never satisfied merely to collect, for he carried on extensive experiments in such fields as hybridization, chemically induced fasciation, and new methods of propagation. One of the most widely-grown succulents, *Sedum morganianum* (the "Burro's Tail"), was named in his honor, and he was the first to flower this species and *Echeveria longissima,* thus contributing to their eventual classification. Many of those attending this year's Convention were privileged to visit this unique collection before it was dispersed. M. K..

SPOTLIGHT ON ROUND ROBINS

The first of the summer has been very quiet for our Robins, but inquiries for joining them are still coming in steadily, which always pleases me. Although I have never had a complaint, I regret that it sometimes takes longer to place new members than it did formerly when the older Robins needed additional members to fill heir ranks, and it troubles me that the period of waiting for a promised Robin often has been prolonged, and must appear that nothing is being done. But it takes time. Your consideration has been greatly appreciated.

The newest members are Mrs. R. C. Cooper, Phoenix, Arizona; Mrs. Julia Free, Arizona; and Mrs. M. Turnock, Stretford, Lancs, England. Also Mrs. Donald G. Bansemer, Seattle, Washington, whose letter just arrived, will surely be placed. Her letter reminds me to say that no matter how few plants, or how green a beginner you are, with what degree of success or lack of it you have had with your plants, you are most welcome to join the Robin of your choice. There are many who share the same delightful hobby, and, should you be having poor luck, you just might pick up some ideas to help you. You may join as many Robins as you wish, if you belong to the Cactus and Succulent Society of America.

I am happy to report that Mrs. Nancy Duck, Grand Junction, Colorado, has volunteered to direct that very popular Robin, Winter-Hardy Cactus Robin No. 2, and she has my grateful thanks.

The international Mammillaria R. Robin No. 1 has taken flight after some delay but with its full quota of members. May its flight be a long and successful one. A new International Robin is being prepared for those who are interested in a general cactus and succulent Robin. It would be most gratifying if members from continental Europe, Africa or the South American countries might grant a long desired wish, which has yet to be fulfilled, and write in to join in this Robin. However, the invitation excludes no one. Come one, come all, from wherever you are.

Several good suggestions for new Robins have been sent to me recently. One is for a Window Sill Robin. Now here is a nice Robin for beginners, whose collections are presumably small enough for the window sill. If this idea seems just what you would like, drop me a note or a card and it will be formed. Another Robin has been suggested on hybridizing of cacti and succulents. If this field of plant experiment and improvement appeals, perhaps this could be formed also. Two members have spoken of it, and it would be interesting to me to know if there are others who would find this sort of Robin fascinating. Let me know. Every so often there is an inquiry for a Robin on Epiphyllums. To date not enough members have written to make it possible but I mention it again that it might be called to your attention. If any of you wish this Robin, and there are perhaps five members, it could be started off on its first round. I am always pleased to have suggestions for new Robins to report.

In the news from the Robins, C. & S. R. Robin No. 9 managed to get two rounds this trip and from both the cacti are making the headlines for flowers. From Shirley Schrade, Director of this Robin, we learn, "My detailed records show that never before have my plants bloomed so well, or started to bud so early. We have never had such high temperatures in April before either." "I am having a bumper crop of flowers on everything this year." With her enthusiasm for her cacti, we all understand how perfectly delighted she was to have her mother bring her a big Echinocereus from their own recently purchased lot in Arizona. As a postscript she said, "My 'grand event' for this year happened last week—the opening of my beautiful, night-flowering Setiechinopsis mirabilis. The plant is as big and as thick as your little finger, short spines and almost black in color—a very unattractive plant—but the flower, huge, dainty white and waxy, was the most beautiful I have yet to see." Helen Arp, in New Jersey, in trying to get buds on her Epiphyllums, made up a mixture of sheep manure, bone meal, phosphate and Michigan peat. "The smell," she said, "nearly drove us out of the house. But I feel proud as Epiphyllum Professor Ebert has two large buds." Roy Vail says, "I'm going to have to do something about the way the sun comes into my greenhouse and burns plants. I don't think there is air movement enough. I even sunburned Aztekium ritteri, which I did not know was possible." His list of flowering cacti was long and impressive and included Mammillarias, Euphorbias, Notocactus, Parodias, Astrophytums and Echinopsis. I am sure you all will know exactly how Elnora Haines feels when she says, "At last I have a few cactus in bloom. Oh, what a good feeling it is." Nona B Mott writes, "Things are sailing along right smart in my succulent world. Blooms and blooms and blooms! And lots of nice new growth. The only new outstanding thing is the mass of buds on my night blooming Cereus in the corner of the yard. They will be a sight to see when they open. All seem to be about at the same development so maybe the whole works will perform at once." Among the many interesting items Lavon Cleaver writes about are these: "The way my Epiphyllums have responded to living in gallon tin cans, I am about to discard the clay pots. There is too much evaporation through the clay; I am now reaping the results of some hard work that I did a few years ago. I planted wide rows of Mesemb. (moss) across the 100 ft. front of this place and about 50 ft. deep and among that several acacia trees. Now there is a silken carpet of brilliant reds, pink, purple, yellow and orange. In the very front a border of low growing moss with tiny orchid flowers. No weeds grow there now and once the moss gets going it never needs water other than the winter rains."

Marian Fox, Director of C. & S. Robin No. 8, reports Frances Anderson is having her usual marvelous luck flowering her many species of cacti; Emelia Duarte won a blue ribbon with a Hoya; Arlene Guertin is happy because her seedlings are doing well; Edna Cowan said her Epiphyllums and Mamms. were starting to flower; Lib Swain is off for a month's vacation and Marian herself has her plants acting more as they should this year after an attack of nematodes. All the cacti have loved the heat we have had she said.

The two Winter-Hardy Cactus Robins No. 1 and No. 2 have been making good time in their flights. It has been very interesting to find many cacti are hardy besides the common Opuntia compressa, O. polyacanthus, and O. fragilis. But as Ethel Karr, Director of No. 1 wrote from Colorado, "each locality presents its own problems, and while some species are hardy even to the northern border, not all can be grown that far north." For Irma Huch in Illinois, these are hardy: Homalocephala texensis, Mam. applanata, Coryphantha vivipara, various Echinocereus, Nobesseya missouriensis. But she suggests a cover for them as they will not take all the wet and cold weather. From Illinois also is Linda Hapke, and she has Opuntia davisii, O. imbricata, O. arborescens, one Echinopsis multiplex, besides unnamed pincushion-type cacti and Opuntias from other states that have proved hardy with excellent drainage supplied. Ethel Karr adds that O. basilaris is hardy when dry and protected on an open porch. Edith Bestard says that her bed of hardy cacti—Opuntias and others—looks in good shape except for a few Opuntias

left out to test which are limp, putty-colored corpses. O. santa-rita is fine, as well as the Chollas and some Pincushion types. John Daily says, "it is not uncommon to see an Opuntia growing in someone's garden, and presumably O. opuntia (O. compressa) which is our only native cactus in Indiana. It grows in the sandy country of the north and the clay of the southern hills of Indiana." Apparently this plant is not fussy as to soil. A few notes from the initial round of the Hardy Cactus Robin No. 2 have been gleaned. From Texas, Billie Anderson says, "I must have fifteen or twenty different Opuntias, most are wild, and counting Chollas or tree cactus—favorites of mine—there are more." Ethel Karr has the last words of this report saying that after the Pediocactus the hardy Echinocereus viridiflorus blooms. "One plant of nine or ten stems covered itself with its greenish yellow flowers on two separate occasions last year." She says of the Opuntia polyacantha, "it has more variations than I can count. They are a very spiny tribe. It blooms on each of the variations from pale rose to near purple, creamy yellow to rich orange-peach and I have seen them variegated red and yellow 3-in. blooms."

Now that you have had a sample of what Robins are like, does it not pique your interest to belong? Do write me.

(Mrs.) Gladys H. Panis
P. O. Box 705, Falmouth, Massachusetts

Another dry summer and fall about gone and more plants for which to find shelter. No, I never refuse a plant and whether cacti or succulents, I find a ready haven on my overfilled shelves, floor, benches, storage room and extra window space.

Two thirds of my collection is outside and the plants range from shaded Epiphytes to full sun to south-west types. At present there is very little indication that I will have to rush them in much before November 15th (after study of my weather diary for 1933-1956).

I gave my last liquid feeding the first week in August. This gives me two months (plus or minus) for the plants to absorb it, grow, and become semi-dormant or dormant. Some of the plants that have been non-bloomers to shy-bloomers have responded to extra feedings and better light so that I have had what I consider the best of many good years.

It has not been repotting because many of these have been in the same soil for years. It has not been better light as I've tried that before; so it must be heavier nitrogenous feedings. I have tried household ammonia for many years on some Epiphytes, African violets, begonias, etc., and found marked improvement in stems, leaf and flowers. I talked to Ben Veldhuis in Ontario and Mr. Vershiugle of Montreal and they both talked more nitrogen than I had used on other types. Later I got samples of Pokon from Otto Schmidt who had grown plants in Germany and Holland.

The conclusion I arrived at after Canada and the 1957 convention, is we are all gradually losing *that look of horror when fertilizers are mentioned* and admitting the truth we all use some now and then and even more than that. We all read, with tongue in cheek, the hints of some writers that cacti had passed through a rich-poor-rich etc. soil time and needed richer soil. Now experimentation proves the premise.

In the last ten years I've gradually left out more and more sand of that original one-third, as well as drainage material other than a piece of crock over the drainage hole. Of course, I did not admit this in polite cactophilic circles as I was even then a rebel. It has taken somewhat longer to cut out the lime in the soils but I have been persuaded by general analysis of the local water supply to leave out most of the lime and let the filtered Lake Erie water add it. There is no miracle as yet but I'm sure there will be no lime shortage.

In other words, I'm fast narrowing the gap between the soils for Epiphytes and that for other types. I've worked the lazy-potter trick on some Epiphytes by using vinegar to neutralize excess lime deposits until the water runs through the drainage hole. New growth follows within a short time and continues to develop. The plant I experimented with was Weberocereus bioleyi which had stopped growing for two seasons and had canker-like abrasions. After treatment it stopped drying back, cankers disappeared and it put out six new shoots one foot long and three three-inch ones. It also budded and bloomed.

I have several enquiries about the use of the synthetic as well as the natural forms of urea which is a white crystaline substance that can be bought in its impure form for 50¢ a pound. Over the last year and a half I have some outstanding results with Epiphytes, Pereskias Pereskiopsis as well as Echinopsis, Rebutias, Lobivias, Fraileas, etc. I agree with the other users, it does give results in the culture of some old hardshells which have been taking up shelf room.

Ammonium nitrate is good too, and after I've talked to successful growers, collectors, etc., I've found that we frequently use too little nitrogen in our fertilizers. Pokon from Holland has 16 percent available nitrogen, 21 percent phosphoric acid, and water soluble potash 27 percent. Some American growers claim European soils are sandier and contain less humus. The European growers claim our 6-10-4 is low in all three of the plant nutrients.

From the enquiries I receive I'm sure that the trend is toward wiser use of fertilizers among the amateur growers who no doubt have read the methods employed by Canadian and European growers. I infrequently resort to fertilizers to achieve a better plant than I would get without it.

Most of the cactophiles I contacted this summer in my trips to the east and west coasts talk the same language—namely, use 'well-developed, well-fed-plant' fertilizers no matter whether it resembles the habitat specimen or not. Over feeding, no! Assistance, yes!

NAMES, NOTES AND NEWS

The Moortens of Palm Springs made the National Geographic Magazine—November 1957 issue. In the article "Californians Escape to the Desert" are many color illustrations of desert plants and places; among them is one of Pat and "Cactus Slim" Moorten. ADV.!

WANTED

R. J Murdock, 2559 E. Somerset St., Phil., 34, Pa., would like to purchase *Cephalocereus leucocephalus*. Evidently this Mexican plant is hard to find.

QUESTIONS and ANSWERS

Conducted by HARRY JOHNSON Paramount, Calif.

Question: I have been reading about how to make cacti flower and note the importance of the dormant period in winter. During the dormant period should the plants have any sun at all or should they be put in an altogether shady place? I am afraid the sun may promote growth and all shade retard flowering. They also state to keep them at a temperature of 50 degrees which seems impossible here in San Diego as our daytime temperatures reach at least 60 degrees and much more in the house. I am also expecting to receive some Orchid Cacti and Christmas Cacti. What about their culture?

GLADYS M. THORPE, San Diego, Cal.

Answer: The instructions given in most books is for cacti grown in cooler regions than our South West. Where temperatures do not drop much below 20 or 25 degrees above zero and the plants are grown out of doors, they will naturally go dormant during the winter months. They should be out in the full sun to thoroughly mature their growth. Under such conditions most plants which have reached flowering maturity will bloom abundantly. Your San Diego climate is ideal for the growing and flowering of both cacti and succulents. You will not need to worry about either the Orchid Cacti or the Christmas Cacti except to see they do not get too dry. As regards the 50 degree winter resting temperature—when precise temperatures are given for plants they always refer to night temperatures. Higher day temperatures are to be expected and can seldom be controlled.

Question: I have been collecting cacti with great zest and am now specializing on *Pereskia.* I cannot find much detailed information on them. I am interested in the cultural requirements of *P. aculeata, P. godseffiana* and *P. grandifolia.* I have seven Pereskias planted in my garden and some are getting peaked looking, others are doing splendidly.

GEORGE WEBER, Encinitas, Cal.

Answer: The Pereskias are a most interesting group of cacti and have not been given the attention they deserve by collectors. Probably because they more nearly resemble ordinary garden shrubs, they have lacked the bizarre appeal of the more reduced cacti. Britton and Rose's Cactaceae has many colored plates and photos of this widely spread genus of which in 1919 there was recognized some 19 species. Since then there have been several more described. They are shrubs, trees, or vines—some reaching to more than 35 feet in height. The stems are woody and not very succulent, with large, glossy, normal leaves. Spines are in pairs or in clusters in the axils of the leaves. The spines develop with age on the trunks; they are long, slender, and extremely pungent. The flowers are quite lovely, often like large single roses; they may be solitary, corymbose, or in panicles, either terminal or auxiliary, and white, yellow, or red in color; they differ from all other cacti in having stalked flowers which in cacti seems to be a primitive character.

They are all native to fairly tropical regions and hence are somewhat tender. I found *Pereskia humboldtii* down on the banks of the Amazon in Northern Peru. They are found in Mexico, Central America, the Caribbean Islands, and throughout South America, in dry, brushy regions which may have considerable rain at certain seasons. They often look so much like ordinary trees or shrubs that only by seeing the areoles with the spines would one recognize them as cacti.

Their culture is quite simple as they like a rich loam soil and a fair amount of water during the growing summer season. All the true species like full sun though some of the varieties of *P. pereskia (P. aculeata)* do best in shade as the leaf color variations cannot stand full sun. *P. godseffiana* and *P. rubescens* are such color variations. *P. godseffiana* was described as having leaves mottled or blotched with crimson, apricot-yellow and green but those in cultivation today have lovely, copper-colored leaves and are not blotched. *P. pereskia* is vine-like in habit with large, lemon, tree-like leaves and panicles of cream-colored flowers though some varieties have white or pink blossoms. It has long been used as a grafting stock for Christmas Cactus on which they are very long-lived. *P. bleo* of collections is really *P. grandifolia* which is a Brazilian species widely planted throughout the tropics. The true *P. bleo* is from Colombia and probably Panama. *P. sacharosa* is another common species used for hedges in Argentina; it has lovely rose-colored flowers.

COLORADO CACTOPHILES ACTIVITIES

The May meeting was a covered dish luncheon at the Evergreen home of the Ecksteins. Continuing the program of the year—TV Quiz Shows—the "64,000 Spine Question" category was General Cactus Information. Awards consisted of various sized cactus plants, according to the relative difficulty of the question. Most of those present went home with at least one plant.

July was field trip time. The trek to Wet Mountain Valley enriched the cactus collections of the membership, provided beautiful scenery, and a real field day for rock hounds and amateur geologists in a region noted for the large number of geological ages exposed to view. Those sentimentally inclined also relived the happy time in 1951 when the field trip for the National Convention of the Cactus and Succulent Society covered some of the same territory.

A patio party at the home of President and Mrs. A. L. Chambers was enjoyed in August. At this time our delegates to the Convention in Berkeley, California, Mr. and Mrs. Frank Stiles, recounted their delightful experiences there. We were happy that they could attend and represent the rest of us. How we would love to have been there to renew old acquaintances and meet new ones! Maybe next time.

September found us at the Rutschmans' "Spiney Plateau" enjoying the fall display of riotous color in the aspen trees and other foliage against the background of green pines. "Truth or Consequences" Quiz on general cactus facts brought out many truths and some consequences in the form of poems and songs on cacti, thought up on the spur of the moment.

"What's My Spine?" revealed how much we knew about the spine characteristics of Colorado Echinocerei and Echinocacti. President Chambers set the others a fine example by making a perfect score. For this meeting we were back in Lazy Valley with the Ecksteins, but in case it looks like the Mountaineers have a monopoly on the meetings, it should be explained that the Flatlanders, ignoring thousands of commuting residents (including the Messrs. Rutschman and Eckstein) sports enthusiasts and sightseers, are loath to negotiate the broad mountain highways come winter time. So now all we have to do is sit back and let the others take over until next spring. (Oh, yes—when Mohamet won't come to the mountain, the mountain will go down to Mohamet.)

41ST INTERNATIONAL FLOWER SHOW

Non-professionals will have the opportunity to exhibit their cacti and succulents at the 41st International Flower Show at the New York Coliseum, March 9-15, 1958, according to R. B. Farnham, executive director.

The program includes one class for cacti and one for other succulents, each requiring six varieties in six pots. Both classes are in the non-professional, non-commercial section and will be judged on the opening day of the show, Sunday, March 9.

In addition, entries under the open classes include a 25 square-foot grouping of 50 species or varieties of mixed cacti and succulents on a table 10 x 2½ feet.

Since these plants are so sturdy, out-of-town growers can ship them to the Coliseum, where they will be accepted by the management of the Flower Show, and will be staged and cared for without charge.

The Cactus and Succulent Society will be represented with an information booth.

International Flower Show schedules can be obtained from Miss Kari Berggrav, schedule director, International Flower Show, Essex House, 157 West 58 Street, New York 19, N. Y.

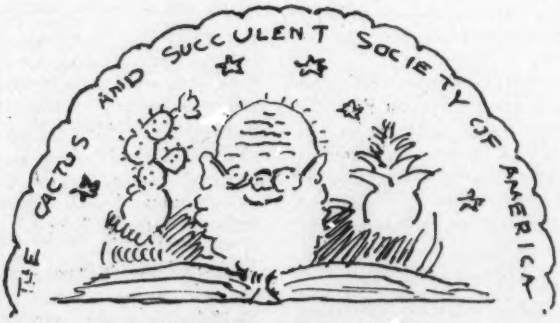
Dr. Abraham A. Bernhardt of Brooklyn, representing the Cactus and Succulent Society (of America), as a member of the International Flower Show amateur steering committee, cooperated in arranging plans for the non-commercial classes in this group.

The entire show will be larger than ever before, with 112 new classes, bringing the total number to 302. It is expected that an increased number of countries will be represented in the International Class, which featured flowers from nine countries last year, and a newly instituted non-commercial section includes 42 plant classes and three flower composition classes open to all amateurs. In addition, there are 75 houseplant classes.

Exhibitors pay no entry fee, and are furnished with free exhibitor's passes. Shipments of out-of-town entries will be accepted by the management of the show, and will be staged and cared for without charge. These exhibits will be returned to exhibitors after the show.

Judging tables have been revised to follow plant societies' standard tables so far as possible. In most cases judging will be performed by accredited judges from the recognized societies.

The International Flower Show is sponsored jointly by the Horticultural Society of New York and the New York Florists' Club.



DR. SCOTT E. HASELTON, EDITOR
AND PAPA OF IT ALL . . . . .

—Unsolicited cartoon by Margaret Kincher

This issue of the Journal completes Volume 39. The next is volume 40 and is dedicated to myself! Please send all congratulatory messages after Christmas to avoid mail congestion! SEH

SPINE CHATS

LADISLAUS CUTAK

Within the near future a new vegetable wax with remarkable properties will be put on the world market, according to an article appearing in the August 1957 issue of CHEMURGIC DIGEST. This product is the natural wax present in the leaves of the Henequen plant *(Agave fourcroydes)*. It is obtained from the bagasse resulting from the mechanical decortication of the leaves. *Agave fourcroydes* is the only species cultivated in Yucatan on a large scale. It grows in poor and permeable soil and withstands severe drought. It takes from 7 to 9 years for a plant to produce leaves 3 feet or more in length and that is when production starts, lasting for an average of 15 years. Each plant yields from 20 to 24 leaves annually with an approximate yield of 4 percent of dry decorticated fiber. The fiber produced annually has an estimated value of approximately 15 million dollars. However, since the decorticated fiber represents only 4 percent of the total weight of the leaf, and the water content is 75 percent, the remainder is considered waste, consisting of fiber that is short with pulpy material. The Mexican Institute of Technological Research, which was founded in 1950, chiefly for the study of the possible utilization of agricultural wastes in Mexico, started laboratory tests on the Henequen bagasse and now have a pilot plant in operation at Merida, Yucatan. The technological properties of Henequen wax have been found to be similar to those of Carnauba wax.

In 1956 Mr. and Mrs. Maurice A. Machris sponsored a Brazilian expedition and took along Dr. E. Yale Dawson as botanist. On this expedition, the party discovered in several localized habitats in the vicinity of the headwaters of the Rio Tocantins in Goias colonies of what appear to be at least three different species of Cephalocereus. Cuttings were taken to Berkeley and Santa Monica, California, and one of them flowered recently and proved to be unlike any previously known species. Dr. Dawson promptly named it after Mr. Machris and described it in Contributions in Science, Number 10 of the Los Angeles County Museum (July 1957). *Cephalocereus machrisii* appears to be most closely related to *C. cuyabensis*. It branches from the base with branches closely erect, grey-green to bluish-pruinose and 11 to 13 ribbed. Areoles are closely set consisting of a cushion of short, straight hairs and a tuft of yellow-brown wool which becomes grey with age. There are 15 to 17 yellow to brown spines, not distinct as to radial and central positions. Flowers are under two inches long, dull reddish without and white within, opening about an hour after sunset and closing about four hours after sunrise.

The pretty *Echeveria pulvinata* which differs from the type by narrower leaves, the dark red hairs on the edges and top of the leaves and sepals, and also the more orange-red color of the petals has now received a new cultivar name by B. K. Boom of Wageningen, Holland, and is now to be known as *Echeveria pulvinata* cv. "Ruby," according to the "Code of nomenclature and registrations of cultivated plants." Information gleaned from the July 1957 issue of SUCCULENTA.

Aloe sinkatana is a new aloe from the Red Sea Hills of Sudan described by Reynolds in the April 1957 issue of THE JOURNAL OF SOUTH AFRICAN BOTANY. It is an acaulescent plant and not a shrub. It sometimes occurs singly but mostly forms groups, and bears capitate somewhat corymbose racemes with the youngest buds spreading horizontal.

The Henry Shaw Cactus Society will be host to the eighth biennial convention of the Cactus and Succulent Society of America in 1959. Since St. Louis is almost in the geographical center of the United States it will give most folks an opportunity to attend. We hope that many eastern and midwestern cactophiles will be present, as we know many from the west coast will be here. It is too early to make any definite promises but we are planning to hold a mammoth cactus show at the Missouri Botanical Garden and hope that both local and out-of-town cactus firms, as well as amateurs, will participate. The Henry Shaw club ordinarily stages a big show in the fall but it will be advanced for the convention in July. St. Louis is not located in the heart of the cactus country but we assure you that we will make it as "cactusy" as possible. We hope to hold some of the meetings at the Garden and others at convention headquarters. If at all possible we hope to secure a large auto court for the headquarters—one that will offer all the conveniences for large gatherings such as ours. Watch my SPINE CHATS for convention information. All you have to do now is to plan to attend the St. Louis meeting in 1959.

Howard Gates, one of the best loved cactus men in the confraternity, passed away on October 4th. I was particularly fond of him because for three consecutive conventions I worked with him as co-chairman. On several occasions I was guest in his home and had opportunities to observe the way he ran his nursery—one of the largest in the world devoted exclusively to cacti and succulents. He was well liked by his employees and his graciousness extended to all cactophiles who had any dealings with him. He certainly will be missed by all who knew him. Gates was a native Californian and spent the best part of his life in some form of the flower and plant business but from 1930 to his death he has been in the cactus and succulent business exclusively. He collected in the deserts of the Southwest and made several trips into Baja California where he discovered a number of new species. To Mrs. Gates and her son we extend our sympathies.

BINDING JOURNALS

We will not bind Journals this year. At the end of 1958 you may send your volumes for binding. You will be notified at that time.

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUESTED BY THE ACT OF CONGRESS OF AUGUST 24, 1912. Of Cactus and Succulent Journal, published bi-monthly at Pasadena, for October, 1950. State of California, County of Los Angeles.

Before me, a notary in and for the State and county aforesaid, personally appeared Scott E. Haselton, who, having been duly sworn according to law, deposes and says that he is the Editor-Publisher of the CACTUS AND SUCCULENT JOURNAL, and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management (and if a daily paper, the circulation), etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, printed on the reverse of this form, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are: Scott E. Haselton, 132 W. Union St., Pasadena, Calif.

2. That the owner is: CACTUS AND SUCCULENT SOCIETY OF AMERICA, INC.

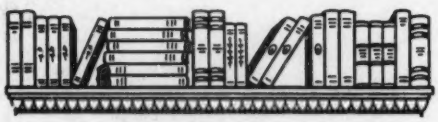
3. That the known bondholders, mortgages, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are: None. Cactus and Succulent Society is a nonprofit organization and issues no stock.

GLENN O. GRIFFIN, *Notary*
OCT. 1, 1957

BACK VOLUMES OF THE CACTUS JOURNAL

Many readers are asking for a price-list of the back issues so we are publishing it again. Some ask for the contents of each issue but this is impossible since it would make a 300-page book in itself. The following prices are unbound. Please add 20¢ per volume for postage. (Supplements have been removed.)

VOLUME	PRICE	VOLUME	PRICE
I (1929)	$10.00	XVI	3.00
II	10.00	XVII	6.00
III	10.00	XVIII	6.00
IV	6.00	XIX	3.00
V	6.00	XX	2.00
VI	6.00	XXI	3.50
VII	6.00	XXII	3.00
VIII	6.00	XXIII	3.00
IX	8.00	XXIV	3.50
X	8.00	XXV	5.00
XI	6.00	XXVI	6.00
XII	8.00	XXVII	5.00
XIII	3.00	XXVIII	4.00
XIV	3.00	XXIX	4.00
XV	7.00		



TWO NEW BOOKS

"Mammillarias" by Mr. C. Mardsen (England) is a "quick reference manual on names, classification, habitat, form color, spines, flowers, and most important of all—detailed cultivation." The price of this informative book is $4.35. Marsden's first book was "Grow Cacti" which was an introduction to the specialized books that will follow as a series. (Now available from Abbey Garden Press.)

Edgar Lamb has a new book "Stapeliads in Cultivation" which contains "just the information you require for success in growing these fascinating plants. Over 100 pages of photography including some lavish color pages." Price $5.00 from Abbey Garden Press.

SUKKULENTENKUNDE VI

Part VI dated Jan. 1957, has just been made available. This Swiss year-book of 64 pages is in German and is a necessity for the cactus reference library. One of the feature articles is on Peruvian Cacti by Werner Rauh with 13 photos. This issue will be reviewed in the next issue by Myron Kimnach. In the meantime it is available for $2.50 from Abbey Garden Press. The five earlier parts are still available for $6.00.

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